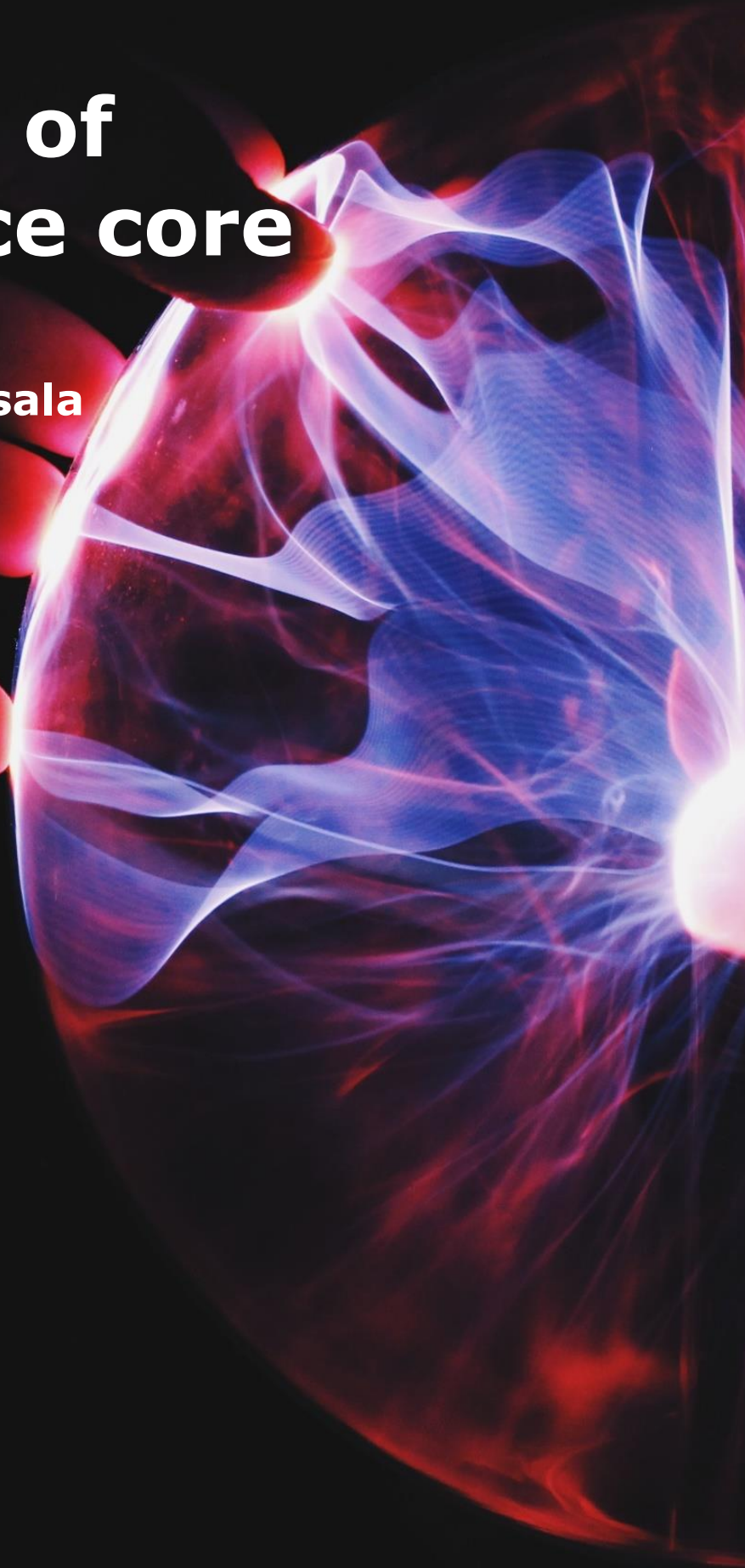




Examples of life science core facilities

in Stockholm-Uppsala
2019

Editors: Per Lek, Klara Gustafsson
Publisher: Stockholm Science City
Published: May 2019



BACKGROUND

Since 2006 Stockholm Science City has gathered core facilities on the digital platform Tools of Science. During 2019 the platform was discontinued and listed core facilities were invited to participate in this summary report.

The purpose is to compile examples of available core facility resources in the Stockholm-Uppsala region and make it publicly available. The core facilities are listed in alphabetic order.

Information regarding the core facilities was compiled during December 2018 to May 2019. Core facilities have been identified through Tools of Science as well as our network and participation is based on voluntary contribution. Hence, the core facilities listed is not a complete overview and should be viewed as examples of available resources in the region. The current report contains 40 core facilities.

The content of this report is based on information gathered in good faith and is believed to be correct at the time of publication. To verify and get the latest information available contact the specific core facility of interest.

ABOUT US

Stockholm Science city is non-profit foundation that was founded in 1990. We strengthen relations and increase collaborations between academia, industry and society to support the development of Stockholm as an attractive place for research and entrepreneurship. Since 2009 we aim to develop the urban district of Hagastaden with nearby surroundings to a world leading centre for life sciences. Visit www.ssci.se for additional information.

CORE FACILITIES - DEFINITION

When talking about core facilities there is no strict definition and different organizations use slightly different wording, and also refers to them as research infrastructures. Below two definitions are stated in order to put "core facilities" in context.

Karolinska Institutet defines core facilities as;

*"By core facility we mean expensive equipment, resources, databases, installations or such, which has a defined form of operation and is not limited to an exclusive group of users."*¹

The National Institutes of Health (NIH), which is part of the U.S. Department of Health and Human Services, defines core facilities as;

*"...core facilities are centralized shared research resources that provide access to instruments, technologies, services, as well as expert consultation and other services to scientific and clinical investigators. The core facility can be open to both researchers within higher education as well as to the industry."*²

¹ <https://ki.se/en/research/core-facilities-definition-and-access>, accessed May 2019.

² https://grants.nih.gov/grants/policy/core_facilities_faqs.htm#3597, accessed May 2019.

CORE FACILITIES AT THE UNIVERSITIES IN THE REGION

The universities also gather information about core facilities within their own organizations, and we compiled landing pages for each of the them when available. In addition, the national resource SciLifeLab is included, as it is a coordinated effort from the four universities in the region.

KAROLINSKA INSTITUTET

ki.se/en/research/core-facilities-for-research

Accessed May 2019.

KTH ROYAL INSTITUTE OF TECHNOLOGY

www.kth.se/en/forskning/tillgangliga-forskni

Accessed May 2019.

SLU – SWEDISH UNIVERSITY OF AGRICULTURAL SCIENCES

www.slu.se/en/research/research-excellence/research-infrastructure/

Accessed May 2019.

STOCKHOLM UNIVERSITY

www.science.su.se/english/research/research-infrastructure/science-research-infrastructure-1.153140

Accessed May 2019.

UPPSALA UNIVERSITY

www.farmbio.uu.se/CoreFacility/
www.kemi.uu.se/research/core-facilities/
www.igp.uu.se/facilities/

Accessed May 2019.

SCILIFELAB

www.scilifelab.se

Accessed May 2019.

SUMMARY LIST OF CORE FACILITIES

Core Facility	Contact person
Advanced Light Microscopy (ALM)	Hans Blom
AlbaNova Nanofabrication Lab	Anders Liljeborg
Animal Behavior Core Facility (ABCF)	Gilberto Fisone
Biochemical and Cellular Assay Facility	Bo Lundgren
Bioinformatics and Expression Analysis	Fredrik Fagerström-Billai
CEM4MAT	Gunnar Svensson
Centre for Pharmacoepidemiology, CPE	Helle Kieler
Chemical Proteomics Core Facility at Biomedicum (MBB)	Massimiliano Gaetani
DESIREE	Henning Schmidt
Electron Microscopy Center (EMC)	Gunnar Svensson
Electrum Laboratory	Nils Nordell
FoUu Service Clinical Pathology	Fredrik Pontén
High Throughput Genome Engineering (HTGE)	Bernhard Schmierer
Human Liver Cell Lab	Ewa Ellis
Jonasson Centre for Medical Imaging	Örjan Smedby
Karolinska Center for Transgene Technologies, KCTT	Stephan Teglund
Karolinska Experimental Research and Imaging Centre (KERIC)	Ann-Christin Sandberg Nordqvist
Karolinska Genome Engineering (KGE)	Bernhard Schmierer
Karolinska Trial Alliance (KTA)	Maria Englund
KI Biobank	Mark Divers
KI Donatum	Henrik Druid
KIGene – Genetic Analysis At CMM	Annika Eriksson
Live Cell Imaging facility	Sylvie Le Guyader
Medicinal Chemistry Hit-To-Lead	Ylva Gravenfors
Microbial Single Cell Genomics	Stefan Bertilsson
Morphological Phenotype Analysis, FENO	Raoul Kuiper
Mutation Analysis Facility, MAF	Kristina Duvelfelt
National Bioinformatics Infrastructure Sweden (NBIS)	
National Genomics Infrastructure (NGI)	
National Mass Cytometry Facility	Lakshmikanth Tadepally
National SPS Facility	Mirva Eriksson
PLA and Single Cell Proteomics Facility	Maria Hammond
Protein Science Facility	Tomas Nyman
Proteomics Biomedicum	Akos Vegvari
Region Uppsala Innovation	Maria Cederblad Tunebjer
Solid-State NMR Facility	Aleksander Jaworski
Stockholm University Brain Imaging Centre (Subic)	Johan Lundström
Swedish Twin Registry, STR	Patrik Magnusson
Testa Center	Jesper Hedberg
The VirusTech Core Facility	Albert Blanchart

CORE FACILITIES WITHIN LIFE SCIENCE

Alphabetic quick links

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#)

– A –

ADVANCED LIGHT MICROSCOPY (ALM)

www.scilifelab.se/facilities/alm

**SciLifeLab, KTH,
Tomtebodav 23A, 171 21 Solna
Hans Blom, Facility Head, hblom@kth.se
Phone: +46 (0)70 688 29 97**

Interested in industrial collaborations: Yes

The facility nationally supports users in need of advanced fluorescence microscopy for nanoscale biological visualization using SIM, STED, STORM/PALM superresolution imaging. Additionally, we support users with single molecule spectroscopy measurement and analysis applying fluorescence correlation spectroscopy (FCS) methods. Moreover, light-sheet fluorescence microscopy supports users with live imaging of organisms, organs or spheroids, and/or cleared larger tissue samples at high 3D volumetric imaging speed with low phototoxicity.

ALBANOVA NANOFABRICATION LAB

www.nanophys.kth.se/nanophys/facilities/nfl/nfl-frames.html

**Stockholm University and KTH
AlbaNova Universitetscentrum, Roslagstullsbacken 21, 109 61 Stockholm
Anders Liljeborg, Lab manager, anders@biox.kth.se
Phone: +46 (0) 737 650 559**

Interested in industrial collaborations: Yes

KTH Applied physics and SU Physics jointly run this facility located in [AlbaNova University Center](#) There are about 50 active users from several departments at KTH and SU. If you are interested in access, contact director [Prof. David Haviland](#) or manager [Dr. Anders Liljeborg](#).

- Joint KTH SU laboratory facilities, with broad user spectrum

- Nano and micro scale fabrication, imaging and metrology
- Graduate students and post docs are users
- Low overhead costs, flexible lab environment for exploratory research

Most of the equipment has been financed by grants from the [K. A. Wallenberg Foundation](#). This facility is a part of [Myfab](#). Users from SU can apply for support within the [SU Core Facility](#), please contact [Prof. V. Krasnov](#) at the [Dept. of Cond. Mat. Phys.](#)

ANIMAL BEHAVIOR CORE FACILITY (ABCF)

ki.se/en/neuro/the-animal-behavior-core-facility-abcf

ABCF is located at two sites:

Comparative Medicine-Biomedicum (KM-B)
Karolinska Institutet, Solna

Preclinical Laboratories (PKL)
Karolinska Hospital, Huddinge

Karolinska Institutet

Department of Neuroscience, Biomedicum, 17164 Solna
Gilberto Fisone, Scientific Director, gilberto.fisone@ki.se
Phone: +46 (0)8 524 873 75

Interested in industrial collaborations: Yes

The new Animal Behavior Core Facility (ABCF) at Karolinska Institutet (KI) is designed to offer optimal environment, instrumentation and technical/educational support to study rodent (mouse and rat) behavior. ABCF will allow users to perform basic phenotype characterizations, as well as complex neuro-behavioral tests. ABCF is fully equipped with methods tailored to study cognitive and motor functions in rodents including set-ups for the analysis of learning and memory, sensorimotor, motivation and mood.

The location of ABCF is ideally suited to accommodate the needs of a large community of scientists working in basic and clinical/translational research.

ABCF is open to all KI users and external users. We plan to be at the forefront of animal behavior research, by offering a new state-of-the-art platform and by promoting scientific excellence at KI.

– B –

BIOCHEMICAL AND CELLULAR ASSAY FACILITY

www.scilifelab.se/facilities/biochemical-and-cellular-assay

SciLifeLab, KI Campus Solna

Stockholm University, Tomtebodavägen 23A, 171 65 Solna

Bo Lundgren, Head of Facility, Bo.lundgren@scilifelab.se

Phone: +46 (0) 162 660

Interested in industrial collaborations: Yes

The Biochemical and Cellular Assay facility provide the drug discovery projects in the DDD platform with enzymatic and cellular assays using microplate based technologies. We support the drug discovery projects with analyze of the activity for newly synthesized molecules and biologicals in order to drive structure-activity explorations.

BIOINFORMATICS AND EXPRESSION ANALYSIS (BEA)

www.bea.ki.se

Karolinska Institutet

NEO building, Department of Biosciences and Nutrition, Hälsovägen 7C, 141 83 Huddinge

Fredrik Fagerström-Billai, Head of Facility, fredrik.fagerstrom-billai@ki.se

Phone: +46 (0)8 524 835 43

Interested in industrial collaborations: Yes

BEA - the core facility for Bioinformatics and Expression Analysis is a national genomic service facility located at the Department of Biosciences and Nutrition in the new NEO building at the KI South Campus in Huddinge. BEA provides an extensive repertoire of genomic technologies to ongoing research projects principally at the Karolinska Institutet but also at other Swedish universities. This includes services for genomic analysis based on the Illumina, Affymetrix, Agilent, and ABI platforms for sequencing, microarray analysis and qPCR. Our services are extensive and ranges from experimental planning to bioinformatic support. We are also offering services for RNA and DNA purification, nucleic acid quality control and different qPCR based assays.

– C –

CEM4MAT

www.cem4mat.se

Stockholm University, Uppsala University, KTH, SWERIM
Contact information please visit www.cem4mat.se
Gunnar Svensson, professor, gunnar@mmk.su.se
Phone: +46 (0)8 164 505

Interested in industrial collaborations: Yes

CEM4MAT is a regional platform to make the Transmission Electron Microscopy based research infrastructure in the Stockholm-Uppsala region accessible and transparent for external and internal users. The four nodes of CEM4MAT, specialised in Materials Sciences, are Uppsala University, Stockholm University, KTH Royal Institute of Technology and SWERIM.

The expertise and infrastructure of these institutions and facilities in CEM4MAT complement each other, which means that there is excellence, sometimes world-leading, in most materials related research. This provides a unique combination of depth and breadth in TEM usage; in scientific knowledge, infrastructure, but also in the amazing regional fleet recently being expanded.

CENTRE FOR PHARMACOEPIDEMIOLOGY (CPE)

ki.se/en/meds/centre-for-pharmacoepidemiology

Karolinska Institutet
Karolinska Universitetssjukhuset, Solna
Eugeniahemmet, Centre for Pharmacoepidemiology T2, 171 76 Stockholm
Helle Kieler, Head of Centre, helle.kieler@ki.se
Phone: +46 (0)8 517 70 629, Mobile: +46 (0)736-334 492

Interested in industrial collaborations: Yes

CPE was established in 2005, with the explicit purpose to create a centre of academic excellence in pharmacoepidemiology, to meet the demands from stakeholders in society and pharmaceutical industry for expertise and consultation in this field.

CPE has since its start met the growing demands, both nationally and internationally, for data on drug safety, drug utilization and rational drug use, including pharmacogenetics. CPE collaborates with international research partners from academia, contract research organizations, and pharmaceutical industry.

CHEMICAL PROTEOMICS CORE FACILITY AT BIOMEDICUM (MBB)

ki.se/en/mbb/chemical-proteomics-core-facility

www.scilifelab.se/facilities/chemical-proteomics-proteogenomics/

Karolinska Institutet

Department of Medical Biochemistry and Biophysics (MBB), Biomedicum A9 (floor 9), Solnavägen 9, 171 65 Solna, Sweden

Massimiliano Gaetani, PhD, massimiliano.gaetani@ki.se

Phone: +46 (0)80 524 878 28

Interested in industrial collaborations: Yes

This facility is one of the two sites of the Chemical Proteomics and Proteogenomics facility, also a national SciLifeLab facility and node of the Swedish national infrastructure for biological mass spectrometry ([BioMS](#)). It is specialized in using MS (mass spectrometry) based proteomics to support drug discovery and development. It identifies major candidate targets and action mechanism key proteins in cells or extracts after treatment with pharmaceutically active compounds. It offers orthogonal, proteome-wide and unbiased quantitative proteomics methods, including: FITeXP (functional identification of targets by expression proteomics); TPP (thermal proteome profiling; PISA (proteome integral stability alteration) assay, one order of magnitude faster and more cost effective than TPP; SIESTA (system-wide identification of enzyme substrates by thermal analysis). FITeXP, PISA and SIESTA have been developed at its KI-MBB laboratories. Through HDX (hydrogen deuterium exchange) MS it can determine the protein binding site. It offers complete pipelines, providing expertise and well equipped laboratories for cell culture, sample preparation, MS and bioinformatics.

– D –

DESIREE

www.desiree-infrastructure.com

Stockholm University

Department of Physics, Roslagstullsbacken 21, 106 91 Stockholm

Henning Schmidt, professor, schmidt@fysik.su.se

Phone: +46 (0)8 5537 8643

Interested in industrial collaborations: Yes

DESIREE is a facility for studies of individual reactions with ions in well-defined quantum states and is one of only three cryogenic ion-beam storage rings in operation worldwide and the only one where ion-ion interactions can be investigated. The national infrastructure DESIREE is operated by a consortium consisting of Stockholm University, the University of Gothenburg and Malmö University.

– E –

ELECTRON MICROSCOPY CENTER (EMC)

www.mmk.su.se/research/research-facilities/electron-microscopy-center-emc

Stockholm University
Department of Materials and Environmental Chemistry
Arrhenius Laboratory, 106 91 Stockholm
Gunnar Svensson, professor, gunnar@mmk.su.se
Phone: +46 (0)8 16 45 05

Interested in industrial collaborations: Yes

EMC provides modern facilities and expertise on electron microscopy and spectroscopy. EMC has three transmission electron microscopes, three scanning electron microscopes and a variety of sample preparation equipments. Besides supporting research and teaching activities at Stockholm University, the center is also open to other universities, research and industrial institutes.

ELECTRUM LABORATORY

www.electrumlab.se

KTH
Electrum, Isafjordsgatan 22–24, Electrum 229, 164 40 Kista
Nils Nordell, director, nordell@kth.se
Phone: +46 (0)702 369 274

Interested in industrial collaborations: Yes

The Electrum Laboratory is a resource for education, research, development, prototyping and production of a wide range of devices based on nano and microtechnology. We offer access to a 1300 m² cleanroom with complete and highly qualitative process lines for device research and manufacturing. In addition, we offer access to 1500 m² of state-of-the-art laboratories for, e.g., nanomaterials synthesis and processing, advanced materials and device characterization, and die mounting. The Electrum Laboratory is a base for leading research groups and has a strategic role as a production incubator for high tech spin-off companies. We support manufacturing and characterization for a wide range of technologies, e.g., micro and nano electromechanical systems, micro and nanoscale materials, electronic and photonic components and devices in silicon and in compound semiconductor materials.

Electrum laboratory is also part of Myfab, the Swedish national infrastructure for micro and nanofabrication.

– F –

FoUU SERVICE CLINICAL PATHOLOGY

<https://www.akademiska.se/for-vardgivare/sektioner/klinisk-patologi/forskning/>

Akademiska Sjukhuset/Uppsala University Hospital

Klinisk Patologi ing. C5, 751 85 Uppsala

Fredrik Pontén, medical manager, fredrik.ponten@igp.uu.se

Phone: +46 (0)18 611 38 46

Contact information: +46 (0)18 611 38 07, kpfouservice@akademiska.se

Interested in industrial collaborations: Yes

FoUu-service provides help with processing of tissue samples – both patient samples stored in the pathological sample collection and researchers own samples.

Our facility performs the following techniques:

- Freezing of fresh tissue samples
- Fixation, dehydration and paraffin embedding of fresh tissue samples
- Sectioning
- Histological stainings
- Immunohistochemical stainings, using existing protocols or establishing new customer-specific protocols
- Scanning of slides
- Pathologist consultation based on individual contracts.

Our goal is to continuously expand within our area to be able to offer our customers the best service. We want to be the first choice in tissue-based research.

– H –

HIGH THROUGHPUT GENOME ENGINEERING (HTGE)

www.scilifelab.se/HTGE

SciLifeLab and Karolinska Institutet
Biomedicum 9B, Department of Medical Biochemistry and Biophysics
Solnavägen 9, 171 65 Solna
Bernhard Schmierer, PhD, Facility Head, Bernhard.schmierer@ki.se

Interested in industrial collaborations: Yes

The High Throughput Genome Engineering (HTGE) facility provides affordable access to high throughput functional genomic screens using the CRISPR/Cas9 system in cell lines. Pooled CRISPR/Cas9 screening enables parallel interrogation of thousands to tens of thousands of genes for involvement in biological processes of interest. HTGE provides access to verified lentiviral CRISPR guide libraries for whole genome and more targeted loss- and gain of function studies (CRISPR knock-out, CRISPR inhibition, CRISPR activation). We also offer generation of stable Cas9-expressing lines in users' cells of interest. CROPSeq and CRISPR-X approaches are in development. HTGE aims to remain competitive and we adopt new screening strategies in collaboration with interested clients. HTGE operates on a national level and supports the Swedish research community (academia, industry and healthcare) with CRISPR screening projects from planning to data analysis.

HUMAN LIVER CELL LAB

ki.se/clintec/levercellslaboratoriet

Karolinska Institutet
CLINTEC, Unit for Transplantation Surgery
Karolinska University Hospital Huddinge, F67
141 86 Huddinge
Ewa Ellis, Ass. Professor, Ewa.Ellis@ki.se
Phone: +46 (0)8 585 80 086

Interested in industrial collaborations: Yes

The Liver Cell Laboratory at the Unit of Transplantation surgery, Department of Clinical Science, Intervention and technology (CLINTEC), isolates primary human hepatocytes. Primary human liver cells are a unique resource that is not widely available because of difficulties in acquiring human liver tissue and viable cell isolation. We offer our solid experience and expertise within the hepatocyte field.

Our research team is experienced in the isolation and transplantation of hepatocytes to treat liver disease, and we bring this experience to provide hepatocytes for basic research from liver tissue not suited for clinical transplantation such as tissue obtained from patients undergoing liver resection for cancer. Primary liver cells are the only *in vitro* system for liver studies that maintain the advanced functions of an adult

hepatocyte. Under special culturing conditions these cells preserve their differentiated phenotype but do not divide. Using cultured primary hepatocytes one can study a wide range of systems from pharmaceutical metabolism, toxicity, synthesis and metabolism to advanced canalicular transport.

– J –

JONASSONS CENTRUM FÖR MEDICINSK AVBILDNING
JONASSON CENTRE FOR MEDICAL IMAGING

www.kth.se/en/jcmi

KTH

Inst. för Medicinteknik och Hälsosystem (MTH), Hälsovägen 11C, 141 52 Huddinge

Örjan Smedby, professor, orsme@kth.se

Phone: +46 (0)8 790 9620

Interested in industrial collaborations: Yes

The Jonasson Centre for Medical Imaging was established in 2014 after a donation from Kerstin and Rune Jonasson. The overall aim of the Centre is to promote long-term research collaboration between KTH, KI and Region Stockholm by providing a high-tech imaging platform. The Centre aims to create optimal conditions for internationally leading research within biomedical imaging, including tracer creation, image generation, image analysis, modelling, image-based simulation and visualization, and facilitate commercialisation of research results.

The Centre currently offers access to the following equipment:

- HF ultrasound (Visualsonics) with photoacoustic imaging (preclinical)
- Ultrasound (Supersonics/Verasonics) with Shear Wave Elastography
- Clinical ultrasound equipment (Philips; GE)
- Mobile gamma camera (Neurotom)
- STH's own μ CT/miniPET
- Super-resolution light microscopy (STORM) (Nikon)
- MRI with high-intensity ultrasound (HIFU) (Philips Ingenia 3T)
- Visualization theatre with stereo projection
- 3D printer for medical visualization (MarkForged Mark2)

– K –

KAROLINSKA CENTER FOR TRANSGENE TECHNOLOGIES (KCTT)

ki.se/en/km/karolinska-center-for-transgene-technologies

Karolinska Institutet

Biomedicum, Solnavägen 9, 171 65 Solna

Stephan Teglund, Docent, stephan.teglund@ki.se

Phone: +46 (0)8 524 811 57

Interested in industrial collaborations: Yes

The Karolinska Center for Transgene Technologies (KCTT) provides services in the field of mouse transgenesis and related techniques including the generation, rederivation, and cryopreservation of genetically modified mouse (GMM) strains and embryonic stem cell (mESC) lines. KCTT belongs to Comparative Medicine and is a part of the Karolinska Institutet Mouse Models (KIMM).

For the production of new GMM strains, we offer: 1) microinjection of DNA constructs for generating transgenic mice, 2) microinjection of gene targeted mESCs for generating knockout/knockin mice, and 3) CRISPR/Cas-technology to generate gene-edited mice. We offer the possibility of cryopreserving your GMM strain either as embryos or sperm and to rederive strains from frozen or fresh embryos/sperm into a FELASA-SPF health status. KCTT is a partner of the European Mouse Mutant Archive (EMMA), which is a repository for cryopreserved GMM strains.

KAROLINSKA EXPERIMENTAL RESEARCH AND IMAGING CENTRE - KERIC

ki.se/en/research/karolinska-experimental-research-and-imaging-centre-keric

Karolinska University Hospital

Stockholm, Sweden, Organizational unit: FoU

Ann-Christin Sandberg Nordqvist, Assoc. Professor,

ann-christin.sandberg-nordqvist@sll.se

Phone +46 (0)70 167 10 72

Interested in industrial collaborations: Yes

KERIC is a core facility offering different imaging analyses in experimental systems in combination with experimental surgery in large animals like swine as well as in rodents. The unit belongs to the department of comparative medicine (AKM) and is situated at Karolinska University Hospital, Solna.

We offer a fully equipped facility for experimental surgery with four full size operation units equipped with ventilators and monitors for physiological functions, and two laboratories for small animal surgery. We provide tools for angiography (Philips XD20 including 3D angiography and XperCT offering possibilities for advanced endovascular research, device development and courses in endovascular treatment), MRI (Varian 9.4 Tesla scanner suited for studies of mice, rats, guinea pigs and rabbits, as well as

volumetric analysis of formalin fixed preparations), microPET (Focus 120 Siemens CTI, a rodent camera for dynamic studies of molecules labeled with positron-emitting nuclides) and a combined nano PET-MRI/CT (Mediso nanoScan multimodal small animal imaging system, comprising a 1T static MRI modul, a PET modul and a CT modul, and offer our resources to both academic research, training courses and for external clients to develop and test new equipment.

KAROLINSKA GENOME ENGINEERING (KGE)

ki.se/en/mbb/karolinska-genome-engineering-core-facility

Karolinska Institutet

Department of Medical Biochemistry and Biophysics, Biomedicum 9B

Solnavägen 9, 171 65 Solna

Bernhard Schmierer, PhD, Facility Head, Bernhard.schmierer@ki.se

Interested in industrial collaborations: Yes

The Karolinska Genome Engineering (KGE) facility provides affordable access to the creation of gene-modified cell lines using the CRISPR/Cas9 system. KGE can make any type of genetic modification in any cell line to create reporter cell lines, to introduce disease relevant mutations, or to knock out genes. Such genetically modified cell lines are important research tools, and provide more relevant model systems for applications such as genetic screening or drug screening. KGE designs editing strategies, performs the editing in the client's cell lines, quantifies the allele frequency in the edited cell pool by droplet digital PCR, and delivers a cell pool with known allele frequency to the client. As a Karolinska Institute core facility, KGE prioritises users from Karolinska Institute, however is open also to other clients, whether from academia or industry.

KAROLINSKA TRIAL ALLIANCE (KTA)

www.karolinskatrialliance.se

Karolinska University Hospital

Hälsingegatan 49, 113 31 Stockholm

Maria Englund, Director, maria.a.englund@sl.se

Phone: +46 (0)70-168 49 53

Interested in industrial collaborations: Yes

Karolinska Trial Alliance (KTA) is a professional Clinical Research Center at Karolinska University Hospital in Stockholm. We are specialized in support for clinical research and our purpose is to facilitate the conduct of clinical studies in the Stockholm region and in Sweden overall, through Clinical Studies Sweden, a national collaboration network.

KTA consists of three units that together provide the infrastructure and regulatory support covering all clinical study phases (I-IV) within a wide range of therapeutic areas. Our aim is to streamline the clinical study process and to make it more cost and time-effective. Our services are customized to match our customer's specific requests. In addition to our own resources we also have an extensive network that enables

collaborations with researchers and clinics, as well as different sized commercial companies in the life science sector.

KI BIOBANK

www.ki.se/forskning/ki-biobank and www.biobanksverige.se

Karolinska Institutet

Visiting address: Solna Campus, Nobels väg 12A

Postal address: KI Biobank, Karolinska Institutet, PO Box 281, 171 77 Stockholm

Mark Divers, PhD, Director, mark.divers@ki.se

Phone: +46 (0) 8 524 82 301

Interested in industrial collaborations: Yes

KI Biobank is a core facility offering comprehensive services for handling human samples predominantly in liquid form. It is entirely dedicated to research, and its services range from guidance and advice on planning, ethics and legal aspects to practical lab activities such as sample preparation, DNA extraction, storage and retrieval as well as biobank data services. With 15 years of experience the facility has a proven and documented track-record of delivery, with examples of research resulting in improved healthcare. The facility is home to samples from over 600 000 consenting donors, and some of the sample collections are available for collaborations subject to ethical approval and research agreements. The facility is willing to consider co-development of new services within our skill areas. The full-service catalogue and prices are available on our website, and all enquiries are warmly welcome.

KI DONATUM

ki.se/en/onkpat/ki-donatum

Karolinska Institutet

KI Campus Solna, Retzius v. 3, KI Campus Solna, 171 77 Stockholm

Henrik Druid, professor, Henrik.druid@ki.se

Phone: +46 (0)706 027 141

Interested in industrial collaborations: Yes

KI Donatum offers postmortem tissue samples to researchers. As of Jan. 2019, samples have been collected from 450 deceased donors and has allowed for studies in many different fields, resulting in publications in e.g. Nature, Science and PNAS. According to Swedish law all citizens may indicate their wish to donate tissues after their death for research purposes. KI Donatum was formed to meet these needs and helps research leaders to find suitable postmortem tissues from well characterized donors for various analyses. KI Donatum is not a biobank, but rather has a prospective strategy and provides precisely the postmortem samples requested along with detailed case specific information relevant for the particular research questions. In addition, certain in-house morphological and biochemical analyses of the tissues can be performed. From Aug. 2019, all donors will also be examined with a CT-scan. KI Donatum offers support in writing applications for ethical approval, and may give advice as to study design.

KIGENE – GENETIC ANALYSIS AT CMM

ki.se/en/research/kigene-genetic-analyses-at-cmm

Karolinska Institutet

KIGene core facility, Neurogenetics, MMK, CMM, L8:00, Visionsgatan 18, 171 76 Stockholm, Sweden

Annika Eriksson, PhD, kigene@mmk.ki.se

Phone; +46 (0)705 112 749, +46 (0)8 517 72 663

Interested in industrial collaborations: Yes

With experiences from more than two decades of running a core facility, we have accumulated knowledge and proficiency in how to perform services, supervise and support the users. Our vision is to provide a high quality, reliable and flexible core facility.

We offer Sanger DNA sequencing services with very short turn-around-time, fragment analysis, gene expression analysis, SNP genotyping, miRNA profiling, CNV analyses, quantity and quality determination of RNA and DNA.

In order to meet the increasing demand on higher throughput and efficiency, as well as on cheaper analyses, KIGene has introduced several options for most applications. Our most recent platform is the nCounter system from nanoString Technologies used for high multiplex analyses of most applications listed above.

We offer flexible service levels for most of our platforms. Our equipment can be used by those who have sufficient knowledge and experience. The facility provides start-up theoretical and technical assistance.

Major equipment 2018:

- Two ABI 3730 PRISM® DNA Analyzers (Sanger DNA sequencing, fragment length analysis)
- nanoString nCounter analysis system
- QuantStudio 6 and 7 FLEX instruments (real-time PCR)
- QuantStudio 3D instrument (digital-PCR)
- PSQTM96MA instrument (pyrosequencing)
- Agilent 2100 Bioanalyzer, NanoDrop™ 1000 spectrophotometer

– L –

LIVE CELL IMAGING FACILITY

ki.se/en/bionut/welcome-to-the-lci-facility

Karolinska Institutet

Hälsovägen 7C, Neo, 141 57 Huddinge

Sylvie Le Guyader, Manager, Sylvie.le.guyader@ki.se

Phone: +46 (0)73 733 5008

Interested in industrial collaborations: Yes

The Live Cell Imaging facility offers to researchers a unique set of top-of-the-line equipment for light microscopy, tailor-made trainings and expertise in confocal, widefield, multiphoton, super resolution and lightsheet imaging, as well as software, training and expertise in image analysis. The Live Cell Imaging was awarded the label Nikon Center of Excellence in January 2014 and is also part of the Jonasson center.

– M –

MEDICINAL CHEMISTRY HIT-TO-LEAD – DRUG DISCOVERY AND DEVELOPMENT PLATFORM SCILIFELAB

www.scilifelab.se/facilities/hit2lead/

Drug Discovery and Development platform SciLifeLab

Stockholm University, Tomtebodavägen 23A, 171 65 Solna

Ylva Gravenfors, Head of Facility, ylva.gravenfors@scilifelab.se

Phone: +46 (0)70 672 48 97

Interested in industrial collaborations: Yes

Medicinal Chemistry Hit2Lead is a facility at the Drug Discovery and Development Platform established as a national academic resource at SciLifeLab in 2013. The first priority for the platform is to support integrated drug discovery and development projects utilizing most of the facilities within the platform – which represent a minimal toolbox of infrastructure and expertise needed for early drug discovery. A second priority is to offer service from the individual facilities in projects related to drug discovery and development.

The Medicinal Chemistry - Hit2Lead facility identifies promising early small molecule leads for further optimization. The aim is to have dedicated scientists working together with different academic groups to develop lead compounds with a promising profile for proof-of-concept animal studies. We are 5 medicinal chemists and 1 computational chemist with experience of industrial drug discovery chemistry. — Give us a hit and we will design and synthesize you a lead!

MICROBIAL SINGLE CELL GENOMICS

www.scilifelab.se/facilities/single-cell/

SciLifeLab, Uppsala University

Visiting address: Biomedical Centre (BMC), Husargatan 3, 752 37 Uppsala

Postal address: Uppsala University, Box 596, 751 24 Uppsala

Stefan Bertilsson, Facility Director, mscg@scilifelab.uu.se

Phone: +46 (0)18 471 4006

Interested in industrial collaborations: Yes

The Microbial Single Cell Genomics facility provides single cell genomics services to the scientific community. Single cell genomics is an emerging technology that allows for the exploration of the genome content of individual cells without the need for prior cultivation. The facility offers streamlined single-cell sorting and lysis, whole-genome amplification and screening of individual cells by targeting 16S/18S or customer-specified marker genes, as well as sequencing library preparation for whole genome and targeted gene sequencing services to the scientific community.

MORPHOLOGICAL PHENOTYPE ANALYSIS, FENO

ki.se/en/research/morphological-phenotype-analysis-feno

Karolinska Institutet/Karolinska University Hospital

Address; FENO F52, Karolinska University Hospital Huddinge, 141 86

Deliveries: FENO F56/Patologen, Karolinska Universitetssjukhus Huddinge, SE-141 57

Raoul Kuiper, PhD, DVM, Dipl ECVP veterinary anatomic pathologist,

Raoul.Kuiper@KI.se

Phone: +46 (0)8 585 83 902

Interested in industrial collaborations: Yes

The unit for Morphological Phenotype Analysis (FENO) was established in 2002 with initial support from WCN. We specialize in histopathology of model species including (genetically engineered) rodents and zebrafish. Recent advances in molecular technology and histological stainings are increasing the demand for skills to interpret findings in morphological context, for which we provide the micro-anatomical expertise. Our service includes necropsy, tissue preparation, histochemical and affinity probe based stainings (IHC, RNA-ISH, manual/automated), and qualified pathologic analysis. Microphotographs from brightfield and (multispectral) fluorescence microscopy, as well as whole slide digital scans, can be provided for image analysis and communication of results. We are happy to share advice.

MUTATION ANALYSIS FACILITY (MAF)

www.maf.ki.se

**Novum, Karolinska University Hospital Huddinge
Mutation Analysis Facility, MAF, Clinical Research Center, Karolinska University
Hospital**

141 86 Stockholm, Sweden

Kristina Duvefelt, PhD, Section head, Kristina.Duvefelt@ki.se

Phone: + 46 (0)8 585 836 93, +46 (0)700 017 155, (+ 46(0)706 346 297)

Interested in industrial collaborations: Yes

The purpose and mission of the Mutation Analysis core Facility (MAF) is to help scientists at Karolinska Institutet, its associated hospitals, and other to perform genetic, epigenetic and genetic-epidemiological research in order to identify and assess genetic factors involved in different disease processes. Single nucleotide polymorphism (SNP) genotyping has been offered since 2003 and from 2010 we also perform targeted epigenetic analyses with the Agena MALDI-TOF technique. We also provide genomewide analysis using the Illumina iScan platform using the broad portfolio of Beadchips encompassing: genotyping, karyomapping, cytogenetics and DNA methylation. Since 2017, genetic analysis of familiar hypercholesterolemia with targeted genotyping and sequencing is offered. Furthermore we analyze liquid biopsies for somatic mutations and SNP panels for sample identification and zygosity analysis. MAF has an accreditation of its organization, facilities, Agena genotyping and DNA methylation analysis methods according to ISO/IEC 17025 by SWEDAC.

- N -

NATIONAL BIOINFORMATICS INFRASTRUCTURE SWEDEN (NBIS)

<https://nbis.se>

Staff in Umeå, Uppsala, Stockholm, Gothenburg, Linköping, Lund

Uppsala University

SciLifeLab, Tomtebodavägen 23A, 171 65 Solna

info@nbis.se

Interested in industrial collaborations: Yes

NBIS is a distributed national research infrastructure supported by the Swedish Research Council, Science for Life Laboratory, all major Swedish universities and the Knut and Alice Wallenberg Foundation, providing state-of-the-art bioinformatics to the Swedish life science researchers community. NBIS is also the Swedish contact point to the European infrastructure for biological information ELIXIR.

Present NBIS staff has expertise in protein bioinformatics, mass spectrometry (MS), next generation sequencing (NGS), large-scale data handling and integration, metagenomics, systems biology, biostatistics and RNAseq.

NBIS is predominantly offering bioinformatics support in various projects, depending on the user needs. In the projects, the NBIS persons are working close to the research group, and they spend part of their time to teach the users in order to propagate the bioinformatics knowledge. Furthermore, NBIS provides infrastructure and tools for bioinformatics analyses in order to facilitate these analyses for the users.

NBIS forms the bioinformatics platform at the Science for Life Laboratory.

NATIONAL GENOMICS INFRASTRUCTURE (NGI)

<https://www.scilifelab.se/facilities/ngi-stockholm/>

SciLifeLab

Tomtebodavägen 23A, 171 65 Solna

support@ngisweden.se

Interested in industrial collaborations: Yes

The National Genomics Infrastructure (NGI) is the largest technical platform at SciLifeLab and provides access to technology for massively parallel/next generation DNA sequencing, genotyping and associated bioinformatics support. The platform comprises two nodes: NGI Stockholm and NGI Uppsala.

NATIONAL MASS CYTOMETRY FACILITY

<http://cytof.scilifelab.se/>

Karolinska Institutet

Science for Life Laboratory, Alfa 1, Tomtebodavägen 23A, 171 65, Solna, Stockholm

Lakshmikanth Tadepally, PhD, lakshmikanth.tadepally@ki.se

Phone: +46 (0)737 121 486

Interested in industrial collaborations: Yes

Mass Cytometry (CyTOF) is one of the advanced technologies in single cell-proteomics that enables simultaneous analysis of nearly 50 different proteins in millions of individual cells allowing for detailed functional and phenotypic profiling. At SciLifeLab Mass cytometry facility, the team (directed by Petter Brodin) preps, runs and analyze samples for researchers all over Sweden and beyond.

Cellular targets are labeled (using automation) with metal-tagged antibodies that are detected and quantified by CyTOF2™ (Fluidigm). The high purity and choice of metal isotopes provide minimal background noise from signal overlap. Standardized mass cytometry experiments on customer provided samples are performed using validated panels of metal-coupled antibodies. We also perform technology development of new experimental assays, reagents as well as novel data analysis tools.

Researchers in Sweden with an interest in understanding the cellular frequencies and functional states in their samples of interest can apply for a Mass cytometry service project using our web application form <http://cytof.scilifelab.se/database/app/new>.

NATIONAL SPS FACILITY

www.mmk.su.se/research/research-facilities/national-sps-facility

Stockholm University

**Dept. of Materials and Environmental Chemistry, Svante Arrheniusvägen 16C,
106 91 Stockholm**

Mirva Eriksson, researcher, mirva.eriksson@mmk.su.se

Phone: +46 (0)72 147 44 05

Interested in industrial collaborations: Yes

National SPS facility has two advanced sintering units which utilize an uniaxial pressure and pulsed direct current for rapid heating of the mold in order to sinter the materials. The facility has two SPS machines SPS825 and SPS530ET that is integrated with glove-box. The SPS facility is capable to subject the materials to rapid sintering cycles in vacuum or inert atmosphere. The materials include but are not restricted to ceramics, metals and alloys, intermetallics, composites and porous materials. The SPS facility can produce sintered materials of both small and large dimensions and handle air-sensitive materials. The SPS machines were supported by infrastructure-grant for expensive scientific instruments from The Swedish Research Council (Vetenskapsrådet).

– P –

PLA AND SINGLE CELL PROTEOMICS FACILITY

www.scilifelab.se/facilities/PLA-single-cell-proteomics

SciLifeLab, Uppsala University

Visiting address: Biomedical Centre (BMC), Husargatan 3, 752 37 Uppsala

Postal address: Uppsala University, Box 815, 751 08 Uppsala

Maria Hammond, head of facility, maria.hammond@igp.uu.se

Phone: +46 (0)18 471 48 08

Interested in industrial collaborations: Yes

The facility employs proximity-based assays for high-specificity protein analyses. Antibodies conjugated to DNA oligonucleotides are used as affinity reagents to allow very sensitive protein detection with a high capacity for multiplexing.

Services offered by the facility:

- In situ proximity ligation assays (PLA) in fixed cells or tissue sections to image, with enhanced specificity, the presence of specific proteins, interactions and/or post-translational modifications to e.g. characterise acts of protein signalling in tumor tissues, or to evaluate effects of drug treatment.
- PLA to detect surface proteins of cells or extracellular vesicles using flow cytometric readout.

- PLA to increase sensitivity and specificity of Western blot experiments.
- Other proximity based single- or multiplex assays with dual or triple recognition of the target proteins for highly sensitive and specific protein detection in solutions such as plasma and cell/tissue lysate.
- Conjugation of oligonucleotides to antibodies for custom single-binder or proximity-based protein assays.
- Access to state-of-the art methods to detect proteins, or proteins combined with mRNA transcripts, in single cells.

PROTEIN SCIENCE FACILITY

ki.se/psf

Karolinska Institutet, Biomedicum
Quarter 8D, floor 8, Solnavägen 9, 171 65 Solna
Tomas Nyman, facility manager, tomas.nyman@ki.se
Phone: +46 (0) 524 86 871

Interested in industrial collaborations: Yes

Protein Science Facility provides users with protein production services and access to an infrastructure for macromolecular x-ray crystallography and biophysical characterization of biomolecules and their interactions.

PSF offer recombinant protein production services using high throughput methods. The facility is focused on (but not limited to) His-tagged proteins produced in E. coli and carry out sub-cloning, small-scale expression tests, litre-scale production cultures and a semi-automated two-step protein purification. There are also possibilities for tailor made protocols.

In addition, PSF provides training, supervision and access to instrumentation for macromolecular crystallography and for biophysical characterization of proteins and biomolecular interactions. Please visit us at ki.se/psf to learn more!

PROTEOMICS BIOMEDICUM

ki.se/en/mbb/proteomics-biomedicum

Karolinska Institutet
Division of Physiological Chemistry I,
Department of Medical Biochemistry & Biophysics (MBB), Biomedicum Room
A0951
Solnavägen 9, 171 65 Solna
Akos Vegvari, PhD, akos.vegvari@ki.se
Phone: +46 (0)8 524 877 07

Interested in industrial collaborations: Yes

Proteomics Biomedicum is a proteomics core facility at the Dept. of Medical Biochemistry & Biophysics, Karolinska Institutet, located at Biomedicum. The core facility has a long history and accumulated knowledge about protein analysis. Currently, the laboratory is equipped with top line mass spectrometers (several Orbitrap instruments) suitable to

various types of proteomic analysis. We provide services using best available proteomics techniques and methods, including protein identification in solutions and gels, determination of intact protein molecular weight and post-translational modification sites, global proteome profiling of biological samples as well as targeted proteomics. Proteomics Biomedicum offers not only high quality proteomic analysis but assistance to design appropriate experiments, interpret data and prepare manuscripts.

– R –

REGION UPPSALA INNOVATION

www.akademiska.se/innovation

Regionkontoret

Storgatan 27

75125 Uppsala

Maria Cederblad Tunebjer, head of Region Uppsala Innovation

innovation@region uppsala.se

Interested in industrial collaborations: Yes

Since 2008, Region Uppsala Innovation (former Innovation Akademiska) has supported the development of ideas regarding better health care products and services.

We are a part of Region Uppsala's (Uppsala County Council) Dept. of Research, Innovation & Enterprise. Our purpose and mission is, for the benefit of patients, relatives and personnel, to facilitate the county council's work with health care innovations and to collaboration with life science/med tech companies. As a start we offer expert meetings, an important service within initial assessments of ideas and innovations. During an expert meeting the innovator/company meet representatives for the intended users within the health care, to get answers of vital questions such as:

- What are the needs of the intended users?
- Does the product/idea meet those needs?
- What functionality/design needs to be re-designed and why?
- What functionality/design is not needed and why?

We also run several projects within organisational development, to create a positive culture and effective structure regarding ideas and innovations.

Region Uppsala Innovation is a part of Uppsala's strong network of innovation facilitators, who work closely together for benefit of entrepreneurs and innovators.

– S –

SOLID-STATE NMR FACILITY

www.nmr-stockholm.com

Stockholm University

**Department of Materials and Environmental Chemistry, Arrhenius Laboratory,
106 91 Stockholm**

Aleksander Jaworski, PhD, Facility manager, aleksander.jaworski@mmk.su.se

Interested in industrial collaborations: Yes

Solid-state nuclear magnetic resonance (NMR) Facility at Stockholm University provides resources and expertise in acquisition and interpretation of NMR data from solid materials. Facility operates two solid-state, wide-bore NMR spectrometers with magnetic field strengths of 14.1 and 9.4 Tesla, as well as 9.4 T liquid-state NMR spectrometer. Solid-state systems are equipped with variable temperature units and wide selection of probeheads offering excellent capabilities for materials science, chemistry, and biology. Besides NMR methodology development and support for research groups at Stockholm University, the facility is also open to other universities, institutes and industry.

SWEDISH TWIN REGISTRY (STR)

svenskatvillingregistret.se
ki.se/tvillingregistret

Karolinska Institutet

Department of Medical Epidemiology and Biostatistics (MEB)

Nobels väg 12a, Box 281, 171 77 Stockholm

Patrik Magnusson, Director, patrik.Magnusson@ki.se

Phone: +46 (0)8 524 823 53

tvillingregistret@ki.se (for twins)

str-research@meb.ki.se (for researchers)

Interested in industrial collaborations: Yes

The Swedish Twin Registry (STR) is a national research register open to academic and industrial users. The mission of the STR is to provide a longitudinal research resource for epidemiological and molecular studies of twins. STR is open to applications from Swedish and international researchers. For foreign researchers we require collaboration with a Swedish university. Operating costs for STR is levied through user fees for access to the resource as well as through infrastructure support from VR and KI core facilities. STR is domiciled at the Karolinska Institutet since 1959. It was originally established to study the importance of the environment for the development of cardiovascular disease and cancer. Since then, interest has expanded to almost all common diseases and health problems. The STR has contacted all living Swedish born twins (over 9 years) and is the world's largest twin registry with information about 200 000 twins, DNA from 60 000 and

serum of 13 000 twins. Genome-wide genotyping is available for more than 45 000 participants.

STOCKHOLM UNIVERSITY BRAIN IMAGING CENTRE (SUBIC)

www.su.se/subic/

Stockholm University

Johan Lundström, Director; johan.lundstrom@su.se

Phone: +46 (0) 70 091 31 49

Interested in industrial collaborations: Yes

SUBIC provides state-of-the-art neuroimaging equipment and expertise in both data acquisition and analyses. SUBIC has, among others, a Siemens Prisma 3T MRI scanner, a Zeiss Versa 520 X-ray microscope capable of producing 3D images down to a 0.7 micrometer resolution, three transcranial magnetic stimulation devices with integrated neuronavigation, and a 64-channel active-electrode EEG system. On all platforms, the user can acquire complete psychophysiological measures, eye tracking, as well as present sensory stimuli from all our sensory modalities with a MS precision.

Besides supporting research and teaching activities at Stockholm University, the center is also open to other universities, research, and industrial institutes. We offer comprehensive hands-on training and design/statistical consulting for users before acquisition as well as extensive data analysis support afterwards. For more information on equipment, support, and pricing, see our homepage.

- T -

TESTA CENTER

www.testacenter.com

Testa Center

Björkgatan 30, 751 84, Uppsala

Jesper Hedberg GE/Testa Center, Site manager, jesper.hedberg@ge.com

Interested in industrial collaboration: Yes

An authentic Bio-Process production test bed, an initiative between the Swedish Government and GE Healthcare. Testa Center is an open, non-profit, non GMP, production-like facility and test bed for education, innovation and proof of concept experiments on production processes for biological products. In the 2500 m² upstream/downstream facility, the state-of-the-art equipment offered by GE, includes four start-to -finish bioprocessing laboratories, containing bioreactors with working volume up to 500 liters for mammalian cell culture (50 liters for bacteria) and chromatography equipment from lab to pilot scale. Dedicated experts from GE provide hands-on operational support and expertise. We believe that Testa Center stimulates growth of the Life Science sector and aims to bridge the gap between discovery to industrialization process. The facility provides faster, low-risk, cost-efficient route for verifying processes and technologies, while the project owners retain full control of

intellectual property and data. Moreover, Testa Center provides much-needed advanced training in bioprocessing, ensuring that Sweden will maintain a skilled workforce in this key industrial sector.



THE VIRUSTECH CORE FACILITY

<https://ki.se/en/cmb/the-virustech-core-facility>

Karolinska Institutet

**Department of Medical Biochemistry and Biophysics (MBB), Solnavägen 9,
Biomedicum, Block 4D Office 051, Solna 171 65**

Albert Blanchart, PhD. Albert.blanchart-aguado@ki.se

Phone: +46 (0)8 524 87 387

Interested in industrial collaborations: Yes

The core facility specializes in the production and concentration of Lentiviral (LV), Gamma-retroviruses and Adeno Associated Viruses (AAVs), but it aims to develop and optimize the production of other types of viruses such as Adenovirus (AV), rabies virus, retrograde AAV and Herpes simplex viruses (HSV).

Its primary purpose is to produce and distribute quality viral vectors to our fellow researchers within Karolinska Institutet and investigators world-wide.

We offer a wide range of services from virus production, purification, concentration and titration to plasmid prep, cloning and consulting related to scientific projects and how the use of viral vector might help in their development.

CONTACT

For further information about the report or if your core facility is not listed and you want to be included in future reports please contact us.

Stockholm Science City
Wenner-Gren Center
Sveavägen 166, 12 tr
113 46 Stockholm
Phone: +46(0)8 522 110 40
info@ssci.se

www.ssci.se